

Sequence Listing

<110> Robert D. Klein
Arnon Rosenthal
Heidi S. Phillips
Frederic J. de Sauvage

<120> GFRalpha3 and its Uses

<130> P1268R1

<141> 1999-03-19

<150> US 60/079,124

<151> 1998-03-23

<150> US 60/081,569

<151> 1998-04-13

<160> 25

<210> 1

<211> 387

<212> DNA

<213> Mus musculus

<400> 1

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tcccgtctgc tccagaagag gtcttagaag tgagggtgtg gacccttccg 150

atcctgagcg gctagttttc aaacctccct tgcccctgct tccttctggc 200

tcaggctgct cctccttagg actttgtggg tccagttttg ccttctgttc 250

tgatggtgat tagcgggtca cctccagcgc ttcttctgt ttcccaggac 300

caccagagg ctaaggaatc agtcattccc tgttgccttc tccaggaagg 350

caggctaagg gttctgaggt gactgagaaa aatgttt 387

<210> 2

<211> 353

<212> DNA

<213> Mus musculus

<400> 2

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tggtgctgtc gttgtggctg ccacttgag caggaaactc cttgcccaca 150
gagaacaggt ttgtgaacag ctgtaccag gccagaaaga aatgcgaggc 200
taatcccgt tgcaaggctg cctaccagca cctgggctcc tgcacctcca 250
gttaagcagg ccgctgcct tagaggagtc tgccatgtct gcagactgcc 300
tagaggcagc agaacaactc aggaacagct ctctgataga ctgcaggctc 350
cat 353

<210> 3

<211> 498

<212> DNA

<213> Mus musculus

<400> 3

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tggaagagac catcaaaaac tgccgtgtctg cagcagagga caagaagctt 200
aaatccgtcg ctttcccacc gttccccagt ggcagaaact gttccccaa 250
acagacggcc gccaggtga ccctcaaggc catctcggct cacttcgacg 300
actcgagctc gtctcgtg aagaatgtgt acttctgt cttcgacagc 350
gagacatcgg catctacgtg caggagatgg ccaaactgga caccaagtag 400
ctctctccag tggcggcgaa ggaggaggat cggcgtgacg tcacaagagc 450
gggggtttta ttttttaciaa ggattgcaga agggtgacgg ggcattggg 498

<210> 4

<211> 1935

<212> DNA

<213> Mus musculus

<400> 4

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tgagagccgc gacctccact gctgatgac ctgctactgg tgctgtcggt 150
gtggctgcca cttggagcag gaaactccct tgccacagag aacagggttg 200
tgaacagctg taccagggcc agaaagaaat gcgaggctaa tcccgttgc 250
aaggctgcct accagcacct gggctcctgc acctccagtt taagcaggcc 300
gctgccctta gaggagtctg ccatgtctgc agactgccta gaggcagcag 350
aacaactcag gaacagctct ctgatagact gcaggtgcca tcggcgcatg 400
aagcaccaag ctacctgtct ggacatttat tggaccgttc acctgccccg 450
aagccttggg gactacgagt tggagtctc accctatgaa gacacagtga 500
ccagcaaacc ctggaaaatg aatcttagca agttgaacat gctcaaacca 550
gactcggacc tctgcctcaa atttgctatg ctgtgtactc ttcacgacaa 600
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tgccgggctgt ggggagcggc ggcgtaacac catcgcccc agttgcgccc 800
tgcccttctgt aacccccaat tgccctggatc tgccggagctt ctgccgtgcg 850
gacccttctgt gcagatcacg cctgatggac ttccagacc actgtcatcc 900
tatggacatc cttgggactt gtgcaactga gcagtccaga tgtctgcggg 950
catacctggg gctgattggg actgccatga ccccaaactt catcagcaag 1000
gtcaacacta ctgttgccct aagctgcacc tgccgaggca gcggcaacct 1050
acaggacgag tgtgaacagc tggaaaggct cttctcccag aaccctgcc 1100
tcgtggaggc cattgcagct aagatgcgtt tccacagaca gctctctctc 1150
caggactggg cagactctac tttttcagtg gtgcagcagc agaacagcaa 1200

ccctgctctg agactgcagc ccaggctacc cattctttct ttctccatcc 1250
 ttcccttgat tctgctgcag accctctggt agctgggctt cctcagggtc 1300
 ctttgtcctc tccaccacac ccagactgat ttgcagcctg tgggtgggaga 1350
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 aaccaaccag gcattccgca gcacatcccc tctgctccag aagaggtctt 1450
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 tcccttgccc ctgcttctct etggctcagg ctgctcctcc ttaggacttt 1550
 gtgggtccag ttttgcttct tgttctgatg gtgattagcg gctcacctcc 1600
 agcgttctt cctgtttccc aggaccaccc agaggctaag gaatcagtca 1650
 ttccctgttg ctttctccag gaaggcaggc taagggttct gaggtgactg 1700
 agaaaaatgt ttcccttggt tggagggctg gtgctccagc ctccacgtcc 1750
 ctctgaatgg aagataaaaa cctgctggtg tcttgactgc tctgccaggc 1800
 aatcctgaac atttgggcat gaagagctaa agtctttggg tcttgtttaa 1850
 ctctattac tgtcccaaaa ttccctagt cccttgggtc atgattaaac 1900
 attttgactt aaaaaaaaaa aaaaaaaaaa aaaaa 1935

<210> 5
 <211> 622
 <212> PRT
 <213> Mus musculus

<400> 5
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 Gln Arg Arg Gln Ser Ala Val Ala Ser Arg Ala Ser Thr Arg His
 20 25 30
 Gly Ala Leu Leu Glu Pro Ala Thr Ser Thr Ala Asp Asp Pro Ala
 35 40 45
 Thr Gly Ala Val Val Val Ala Ala Thr Trp Ser Arg Lys Leu Pro
 50 55 60

Cys	His	Arg	Glu	Gln	Val	Cys	Glu	Gln	Leu	Tyr	Pro	Gly	Gln	Lys	
				65					70					75	
Glu	Met	Arg	Gly	Ser	Arg	Leu	Gln	Gly	Cys	Leu	Pro	Ala	Pro	Gly	
				80					85					90	
Leu	Leu	His	Leu	Gln	Phe	Lys	Gln	Ala	Ala	Ala	Leu	Arg	Gly	Val	
				95					100					105	
Cys	His	Val	Cys	Arg	Leu	Pro	Arg	Gly	Ser	Arg	Thr	Thr	Gln	Glu	
				110					115					120	
Gln	Leu	Ser	Asp	Arg	Leu	Gln	Val	Pro	Ser	Ala	His	Glu	Ala	Pro	
				125					130					135	
Ser	Tyr	Leu	Ser	Gly	His	Leu	Leu	Asp	Arg	Ser	Pro	Cys	Pro	Lys	
				140					145					150	
Pro	Trp	Leu	Arg	Val	Gly	Cys	Leu	Thr	Leu	Arg	His	Ser	Asp	Gln	
				155					160					165	
Gln	Thr	Leu	Glu	Lys	Ser	Gln	Val	Glu	His	Ala	Gln	Thr	Arg	Leu	
				170					175					180	
Gly	Pro	Leu	Pro	Gln	Ile	Cys	Tyr	Ala	Val	Tyr	Ser	Ser	Arg	Gln	
				185					190					195	
Val	Pro	Pro	Ala	Gln	Gly	Leu	Arg	Gly	Gly	Met	Leu	Arg	Asp	Pro	
				200					205					210	
Leu	Pro	Ala	Pro	Pro	Leu	Pro	Ser	Pro	Ala	Ala	Leu	Leu	Leu	Glu	
				215					220					225	
Gly	Ser	Arg	Val	Pro	Arg	Ser	Gly	Ser	Ala	Ala	Val	Ser	Leu	Cys	
				230					235					240	
Thr	Arg	Arg	Cys	Gly	Leu	Trp	Gly	Ala	Ala	Ala	His	His	Arg	Pro	
				245					250					255	
Gln	Leu	Arg	Pro	Ala	Phe	Cys	Asn	Pro	Gln	Leu	Pro	Gly	Ser	Ala	
				260					265					270	
Glu	Leu	Leu	Pro	Cys	Gly	Pro	Phe	Val	Gln	Ile	Thr	Pro	Asp	Gly	
				275					280					285	
Leu	Pro	Asp	Pro	Leu	Ser	Ser	Tyr	Gly	His	Pro	Trp	Asp	Leu	Cys	
				290					295					300	

Asn	Ala	Val	Gln	Met	Ser	Ala	Gly	Ile	Pro	Gly	Ala	Asp	Trp	Asp	
				305					310					315	
Cys	His	Asp	Pro	Lys	Leu	His	Gln	Gln	Gly	Gln	His	Tyr	Cys	Cys	
				320					325					330	
Leu	Lys	Leu	His	Leu	Pro	Arg	Gln	Arg	Gln	Pro	Thr	Gly	Arg	Val	
				335					340					345	
Thr	Ala	Gly	Lys	Val	Leu	Leu	Pro	Glu	Pro	Leu	Pro	Arg	Gly	Gly	
				350					355					360	
His	Cys	Ser	Asp	Ala	Phe	Pro	Gln	Thr	Ala	Leu	Leu	Pro	Gly	Leu	
				365					370					375	
Gly	Arg	Leu	Tyr	Phe	Phe	Ser	Gly	Ala	Ala	Ala	Glu	Gln	Gln	Pro	
				380					385					390	
Cys	Ser	Glu	Thr	Ala	Ala	Gln	Ala	Thr	His	Ser	Phe	Phe	Leu	His	
				395					400					405	
Pro	Ser	Leu	Asp	Ser	Ala	Ala	Asp	Pro	Leu	Val	Ala	Gly	Leu	Pro	
				410					415					420	
Gln	Gly	Pro	Leu	Ser	Ser	Pro	Pro	His	Pro	Asp	Phe	Ala	Ala	Cys	
				425					430					435	
Gly	Gly	Arg	Glu	Leu	Ala	Ser	Leu	Trp	Lys	Lys	Thr	Gln	Arg	Ala	
				440					445					450	
Thr	Gln	Gln	Pro	Gly	Thr	Asn	Gln	Ala	Phe	Arg	Ser	Thr	Ser	Arg	
				455					460					465	
Leu	Leu	Gln	Lys	Arg	Ser	Lys	Gly	Leu	Pro	Phe	Arg	Ser	Ala	Ala	
				470					475					480	
Ser	Phe	Gln	Thr	Ser	Leu	Ala	Pro	Ala	Ser	Phe	Trp	Leu	Arg	Leu	
				485					490					495	
Leu	Leu	Leu	Arg	Thr	Leu	Trp	Val	Gln	Phe	Cys	Leu	Leu	Phe	Trp	
				500					505					510	
Leu	Ala	Ala	His	Leu	Gln	Arg	Phe	Phe	Leu	Phe	Pro	Arg	Thr	Thr	
				515					520					525	
Gln	Arg	Leu	Arg	Asn	Gln	Ser	Phe	Pro	Val	Ala	Phe	Ser	Arg	Lys	
				530					535					540	

Ala Gly Gly Phe Gly Asp Glu Lys Cys Phe Leu Cys Val Glu Gly
545 550 555

Trp Cys Ser Ser Leu His Val Pro Leu Asn Gly Arg Lys Pro Ala
560 565 570

Gly Val Leu Thr Ala Leu Pro Gly Asn Pro Glu His Leu Gly Met
575 580 585

Lys Ser Ser Leu Trp Val Leu Phe Asn Ser Tyr Tyr Cys Pro Gln
590 595 600

Ile Pro Leu Val Pro Trp Val Met Ile Lys His Phe Asp Leu Lys
605 610 615

Lys Lys Lys Lys Lys Lys Lys
620 622

<210> 6

<211> 460

<212> PRT

<213> Homo sapiens

<400> 6

Met Phe Leu Ala Thr Leu Tyr Phe Ala Leu Pro Leu Leu Asp Leu
1 5 10 15

Leu Leu Ser Ala Glu Val Ser Gly Gly Asp Arg Leu Asp Cys Val
20 25 30

Lys Ala Ser Asp Gln Cys Leu Lys Glu Gln Ser Cys Ser Thr Lys
35 40 45

Tyr Arg Thr Leu Arg Gln Cys Val Ala Gly Lys Glu Thr Asn Phe
50 55 60

Ser Leu Ala Ser Gly Leu Glu Ala Lys Asp Glu Cys Arg Ser Ala
65 70 75

Met Glu Ala Leu Lys Gln Lys Ser Leu Tyr Asn Cys Arg Cys Lys
80 85 90

Arg Gly Met Lys Lys Glu Lys Asn Cys Leu Arg Ile Tyr Trp Ser
95 100 105

Met Tyr Gln Ser Leu Gln Gly Asn Asp Leu Leu Glu Asp Ser Pro
110 115 120

Tyr	Glu	Pro	Val	Asn	Ser	Arg	Leu	Ser	Asp	Ile	Phe	Arg	Val	Val	
				125					130					135	
Pro	Phe	Ile	Ser	Val	Glu	His	Ile	Pro	Lys	Gly	Asn	Asn	Cys	Leu	
				140					145					150	
Asp	Ala	Ala	Lys	Ala	Cys	Asn	Leu	Asp	Asp	Ile	Cys	Lys	Lys	Tyr	
				155					160					165	
Arg	Ser	Ala	Tyr	Ile	Thr	Pro	Cys	Thr	Thr	Ser	Val	Ser	Asn	Asp	
				170					175					180	
Val	Cys	Asn	Arg	Arg	Lys	Cys	His	Lys	Ala	Leu	Arg	Gln	Phe	Phe	
				185					190					195	
Asp	Lys	Val	Pro	Ala	Lys	His	Ser	Tyr	Gly	Met	Leu	Phe	Cys	Ser	
				200					205					210	
Cys	Arg	Asp	Ile	Ala	Cys	Thr	Glu	Arg	Arg	Arg	Gln	Thr	Ile	Val	
				215					220					225	
Pro	Val	Cys	Ser	Tyr	Glu	Glu	Arg	Glu	Lys	Pro	Asn	Cys	Leu	Asn	
				230					235					240	
Leu	Gln	Asp	Ser	Cys	Lys	Thr	Asn	Tyr	Ile	Cys	Arg	Ser	Arg	Leu	
				245					250					255	
Ala	Asp	Phe	Phe	Thr	Asn	Cys	Gln	Pro	Glu	Ser	Arg	Ser	Val	Ser	
				260					265					270	
Ser	Cys	Leu	Lys	Glu	Asn	Tyr	Ala	Asp	Cys	Leu	Leu	Ala	Tyr	Ser	
				275					280					285	
Gly	Leu	Ile	Gly	Thr	Val	Met	Thr	Pro	Asn	Tyr	Ile	Asp	Ser	Ser	
				290					295					300	
Ser	Leu	Ser	Val	Ala	Pro	Trp	Cys	Asp	Cys	Ser	Asn	Ser	Gly	Asn	
				305					310					315	
Asp	Leu	Glu	Glu	Cys	Leu	Lys	Phe	Leu	Asn	Phe	Phe	Lys	Asp	Asn	
				320					325					330	
Thr	Cys	Leu	Lys	Asn	Ala	Ile	Gln	Ala	Phe	Gly	Asn	Gly	Ser	Asp	
				335					340					345	
Val	Thr	Val	Trp	Gln	Pro	Ala	Phe	Pro	Val	Gln	Thr	Thr	Thr	Ala	
				350					355					360	

Thr Thr Thr Thr Ala Leu Arg Val Lys Asn Lys Pro Leu Gly Pro
365 370 375

Ala Gly Ser Glu Asn Glu Ile Pro Thr His Val Leu Pro Pro Cys
380 385 390

Ala Asn Leu Gln Ala Gln Lys Leu Lys Ser Asn Val Ser Gly Asn
395 400 405

Thr His Leu Cys Ile Ser Asn Gly Asn Tyr Glu Lys Glu Gly Leu
410 415 420

Gly Ala Ser Ser His Ile Thr Thr Lys Ser Met Ala Ala Pro Pro
425 430 435

Ser Cys Gly Leu Ser Pro Leu Leu Val Leu Val Val Thr Ala Leu
440 445 450

Ser Thr Leu Leu Ser Leu Thr Glu Thr Ser
455 460

<210> 7

<211> 464

<212> PRT

<213> Homo sapiens

<400> 7

Met Ile Leu Ala Asn Val Phe Phe Leu Phe Phe Phe Leu Asp Glu
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Thr Leu Arg Ser Leu Ala Ser Pro Ser Ser Leu Gln Asp Pro Glu
20 25 30

Leu His Gly Trp Arg Pro Pro Val Asp Cys Val Arg Ala Asn Glu
35 40 45

Leu Cys Ala Ala Glu Ser Asn Cys Ser Ser Arg Tyr Arg Thr Leu
50 55 60

Arg Gln Cys Leu Ala Gly Arg Asp Arg Asn Thr Met Leu Ala Asn
65 70 75

Lys Glu Cys Gln Ala Ala Leu Glu Val Leu Gln Glu Ser Pro Leu
80 85 90

Tyr Asp Cys Arg Cys Lys Arg Gly Met Lys Lys Glu Leu Gln Cys
95 100 105

Leu	Gln	Ile	Tyr	Trp	Ser	Ile	His	Leu	Gly	Leu	Thr	Glu	Gly	Glu
				110					115					120
Glu	Phe	Tyr	Glu	Ala	Ser	Pro	Tyr	Glu	Pro	Val	Thr	Ser	Arg	Leu
				125					130					135
Ser	Asp	Ile	Phe	Arg	Leu	Ala	Ser	Ile	Phe	Ser	Gly	Thr	Gly	Ala
				140					145					150
Asp	Pro	Val	Val	Ser	Ala	Lys	Ser	Asn	His	Cys	Leu	Asp	Ala	Ala
				155					160					165
Lys	Ala	Cys	Asn	Leu	Asn	Asp	Asn	Cys	Lys	Lys	Leu	Arg	Ser	Ser
				170					175					180
Tyr	Ile	Ser	Ile	Cys	Asn	Arg	Glu	Ile	Ser	Pro	Thr	Glu	Arg	Cys
				185					190					195
Asn	Arg	Arg	Lys	Cys	His	Lys	Ala	Leu	Arg	Gln	Phe	Phe	Asp	Arg
				200					205					210
Val	Pro	Ser	Glu	Tyr	Thr	Tyr	Arg	Met	Leu	Phe	Cys	Ser	Cys	Gln
				215					220					225
Asp	Gln	Ala	Cys	Ala	Glu	Arg	Arg	Arg	Gln	Thr	Ile	Leu	Pro	Ser
				230					235					240
Cys	Ser	Tyr	Glu	Asp	Lys	Glu	Lys	Pro	Asn	Cys	Leu	Asp	Leu	Arg
				245					250					255
Gly	Val	Cys	Arg	Thr	Asp	His	Leu	Cys	Arg	Ser	Arg	Leu	Ala	Asp
				260					265					270
Phe	His	Ala	Asn	Cys	Arg	Ala	Ser	Tyr	Gln	Thr	Val	Thr	Ser	Cys
				275					280					285
Pro	Ala	Asp	Asn	Tyr	Gln	Ala	Cys	Leu	Gly	Ser	Tyr	Ala	Gly	Met
				290					295					300
Ile	Gly	Phe	Asp	Met	Thr	Pro	Asn	Tyr	Val	Asp	Ser	Ser	Pro	Thr
				305					310					315
Gly	Ile	Val	Val	Ser	Pro	Trp	Cys	Ser	Cys	Arg	Gly	Ser	Gly	Asn
				320					325					330
Met	Glu	Glu	Glu	Cys	Glu	Lys	Phe	Leu	Arg	Asp	Phe	Thr	Glu	Asn
				335					340					345

Pro Cys Leu Arg Asn Ala Ile Gln Ala Phe Gly Asn Gly Thr Asp
 350 355 360
 Val Asn Val Ser Pro Lys Gly Pro Ser Phe Gln Ala Thr Gln Ala
 365 370 375
 Pro Arg Val Glu Lys Thr Pro Ser Leu Pro Asp Asp Leu Ser Asp
 380 385 390
 Ser Thr Ser Leu Gly Thr Ser Val Ile Thr Thr Cys Thr Ser Val
 395 400 405
 Gln Glu Gln Gly Leu Lys Ala Asn Asn Ser Lys Glu Leu Ser Met
 410 415 420
 Cys Phe Thr Glu Leu Thr Thr Asn Ile Ile Pro Gly Ser Asn Lys
 425 430 435
 Val Ile Lys Pro Asn Ser Gly Pro Ser Arg Ala Arg Pro Ser Ala
 440 445 450
 Ala Leu Thr Val Leu Ser Val Leu Met Leu Lys Leu Ala Leu
 455 460 464

<210> 8
 <211> 468
 <212> PRT
 <213> Rattus norvegicus

<400> 8

Met Phe Leu Ala Thr Leu Tyr Phe Ala Leu Pro Leu Leu Asp Leu
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 Leu Met Ser Ala Glu Val Ser Gly Gly Asp Arg Leu Asp Cys Val
 20 25 30
 Lys Ala Ser Asp Gln Cys Leu Lys Glu Gln Ser Cys Ser Thr Lys
 35 40 45
 Tyr Arg Thr Leu Arg Gln Cys Val Ala Gly Lys Glu Thr Asn Phe
 50 55 60
 Ser Leu Thr Ser Gly Leu Glu Ala Lys Asp Glu Cys Arg Ser Ala
 65 70 75
 Met Glu Ala Leu Lys Gln Lys Ser Leu Tyr Asn Cys Arg Cys Lys
 80 85 90

Arg	Gly	Met	Lys	Lys	Glu	Lys	Asn	Cys	Leu	Arg	Ile	Tyr	Trp	Ser	
				95					100					105	
Met	Tyr	Gln	Ser	Leu	Gln	Gly	Asn	Asp	Leu	Leu	Glu	Asp	Ser	Pro	
				110					115					120	
Tyr	Glu	Pro	Val	Asn	Ser	Arg	Leu	Ser	Asp	Ile	Phe	Arg	Ala	Val	
				125					130					135	
Pro	Phe	Ile	Ser	Asp	Val	Phe	Gln	Gln	Val	Glu	His	Ile	Ser	Lys	
				140					145					150	
Gly	Asn	Asn	Cys	Leu	Asp	Ala	Ala	Lys	Ala	Cys	Asn	Leu	Asp	Asp	
				155					160					165	
Thr	Cys	Lys	Lys	Tyr	Arg	Ser	Ala	Tyr	Ile	Thr	Pro	Cys	Thr	Thr	
				170					175					180	
Ser	Met	Ser	Asn	Glu	Val	Cys	Asn	Arg	Arg	Lys	Cys	His	Lys	Ala	
				185					190					195	
Leu	Arg	Gln	Phe	Phe	Asp	Lys	Val	Pro	Ala	Lys	His	Ser	Tyr	Gly	
				200					205					210	
Met	Leu	Phe	Cys	Ser	Cys	Arg	Asp	Ile	Ala	Cys	Thr	Glu	Arg	Arg	
				215					220					225	
Arg	Gln	Thr	Ile	Val	Pro	Val	Cys	Ser	Tyr	Glu	Glu	Arg	Glu	Arg	
				230					235					240	
Pro	Asn	Cys	Leu	Ser	Leu	Gln	Asp	Ser	Cys	Lys	Thr	Asn	Tyr	Ile	
				245					250					255	
Cys	Arg	Ser	Arg	Leu	Ala	Asp	Phe	Phe	Thr	Asn	Cys	Gln	Pro	Glu	
				260					265					270	
Ser	Arg	Ser	Val	Ser	Asn	Cys	Leu	Lys	Glu	Asn	Tyr	Ala	Asp	Cys	
				275					280					285	
Leu	Leu	Ala	Tyr	Ser	Gly	Leu	Ile	Gly	Thr	Val	Met	Thr	Pro	Asn	
				290					295					300	
Tyr	Val	Asp	Ser	Ser	Ser	Leu	Ser	Val	Ala	Pro	Trp	Cys	Asp	Cys	
				305					310					315	
Ser	Asn	Ser	Gly	Asn	Asp	Leu	Glu	Asp	Cys	Leu	Lys	Phe	Leu	Asn	
				320					325					330	

Phe	Phe	Lys	Asp	Asn	Thr	Cys	Leu	Lys	Asn	Ala	Ile	Gln	Ala	Phe	
				335					340					345	
Gly	Asn	Gly	Ser	Asp	Val	Thr	Met	Trp	Gln	Pro	Ala	Pro	Pro	Val	
				350					355					360	
Gln	Thr	Thr	Thr	Ala	Thr	Thr	Thr	Thr	Ala	Phe	Arg	Val	Lys	Asn	
				365					370					375	
Lys	Pro	Leu	Gly	Pro	Ala	Gly	Ser	Glu	Asn	Glu	Ile	Pro	Thr	His	
				380					385					390	
Val	Leu	Pro	Pro	Cys	Ala	Asn	Leu	Gln	Ala	Gln	Lys	Leu	Lys	Ser	
				395					400					405	
Asn	Val	Ser	Gly	Ser	Thr	His	Leu	Cys	Leu	Ser	Asp	Ser	Asp	Phe	
				410					415					420	
Gly	Lys	Asp	Gly	Leu	Ala	Gly	Ala	Ser	Ser	His	Ile	Thr	Thr	Lys	
				425					430					435	
Ser	Met	Ala	Ala	Pro	Pro	Ser	Cys	Ser	Leu	Ser	Ser	Leu	Pro	Val	
				440					445					450	
Leu	Met	Leu	Thr	Ala	Leu	Ala	Ala	Leu	Leu	Ser	Val	Ser	Leu	Ala	
				455					460					465	
Glu	Thr	Ser													
				468											

<210> 9
 <211> 464
 <212> PRT
 <213> Rattus Norvegicus

<400> 9
 Met Ile Leu Ala Asn Ala Phe Cys Leu Phe Phe Phe Leu Asp Glu
 1 5 10 15
 Thr Leu Arg Ser Leu Ala Ser Pro Ser Ser Leu Gln Gly Ser Glu
 20 25 30
 Leu His Gly Trp Arg Pro Gln Val Asp Cys Val Arg Ala Asn Glu
 35 40 45
 Leu Cys Ala Ala Glu Ser Asn Cys Ser Ser Arg Tyr Arg Thr Leu
 50 55 60

Arg	Gln	Cys	Leu	Ala	Gly	Arg	Asp	Arg	Asn	Thr	Met	Leu	Ala	Asn	
				65					70					75	
Lys	Glu	Cys	Gln	Ala	Ala	Leu	Glu	Val	Leu	Gln	Glu	Ser	Pro	Leu	
				80					85					90	
Tyr	Asp	Cys	Arg	Cys	Lys	Arg	Gly	Met	Lys	Lys	Glu	Leu	Gln	Cys	
				95					100					105	
Leu	Gln	Ile	Tyr	Trp	Ser	Ile	His	Leu	Gly	Leu	Thr	Glu	Gly	Glu	
				110					115					120	
Glu	Phe	Tyr	Glu	Ala	Ser	Pro	Tyr	Glu	Pro	Val	Thr	Ser	Arg	Leu	
				125					130					135	
Ser	Asp	Ile	Phe	Arg	Leu	Ala	Ser	Ile	Phe	Ser	Gly	Thr	Gly	Thr	
				140					145					150	
Asp	Pro	Ala	Val	Ser	Thr	Lys	Ser	Asn	His	Cys	Leu	Asp	Ala	Ala	
				155					160					165	
Lys	Ala	Cys	Asn	Leu	Asn	Asp	Asn	Cys	Lys	Lys	Leu	Arg	Ser	Ser	
				170					175					180	
Tyr	Ile	Ser	Ile	Cys	Asn	Arg	Glu	Ile	Ser	Pro	Thr	Glu	Arg	Cys	
				185					190					195	
Asn	Arg	Arg	Lys	Cys	His	Lys	Ala	Leu	Arg	Gln	Phe	Phe	Asp	Arg	
				200					205					210	
Val	Pro	Ser	Glu	Tyr	Thr	Tyr	Arg	Met	Leu	Phe	Cys	Ser	Cys	Gln	
				215					220					225	
Asp	Gln	Ala	Cys	Ala	Glu	Arg	Arg	Arg	Gln	Thr	Ile	Leu	Pro	Ser	
				230					235					240	
Cys	Ser	Tyr	Glu	Asp	Lys	Glu	Lys	Pro	Asn	Cys	Leu	Asp	Leu	Arg	
				245					250					255	
Ser	Leu	Cys	Arg	Thr	Asp	His	Leu	Cys	Arg	Ser	Arg	Leu	Ala	Asp	
				260					265					270	
Phe	His	Ala	Asn	Cys	Arg	Ala	Ser	Tyr	Arg	Thr	Ile	Thr	Ser	Cys	
				275					280					285	
Pro	Ala	Asp	Asn	Tyr	Gln	Ala	Cys	Leu	Gly	Ser	Tyr	Ala	Gly	Met	
				290					295					300	

Ile	Gly	Phe	Asp	Met	Thr	Pro	Asn	Tyr	Val	Asp	Ser	Asn	Pro	Thr	305	310	315
Gly	Ile	Val	Val	Ser	Pro	Trp	Cys	Asn	Cys	Arg	Gly	Ser	Gly	Asn	320	325	330
Met	Glu	Glu	Glu	Cys	Glu	Lys	Phe	Leu	Arg	Asp	Phe	Thr	Glu	Asn	335	340	345
Pro	Cys	Leu	Arg	Asn	Ala	Ile	Gln	Ala	Phe	Gly	Asn	Gly	Thr	Asp	350	355	360
Val	Asn	Met	Ser	Pro	Lys	Gly	Pro	Ser	Leu	Pro	Ala	Thr	Gln	Ala	365	370	375
Pro	Arg	Val	Glu	Lys	Thr	Pro	Ser	Leu	Pro	Asp	Asp	Leu	Ser	Asp	380	385	390
Ser	Thr	Ser	Leu	Gly	Thr	Ser	Val	Ile	Thr	Thr	Cys	Thr	Ser	Ile	395	400	405
Gln	Glu	Gln	Gly	Leu	Lys	Ala	Asn	Asn	Ser	Lys	Glu	Leu	Ser	Met	410	415	420
Cys	Phe	Thr	Glu	Leu	Thr	Thr	Asn	Ile	Ser	Pro	Gly	Ser	Lys	Lys	425	430	435
Val	Ile	Lys	Leu	Asn	Ser	Gly	Ser	Ser	Arg	Ala	Arg	Leu	Ser	Ala	440	445	450
Ala	Leu	Thr	Ala	Leu	Pro	Leu	Leu	Met	Leu	Thr	Leu	Ala	Leu		455	460	464

<210> 10

<211> 282

<212> DNA

<213> Artificial

<220>

<221> unknown

<222> 7-8, 11, 13, 15, 17, 19, 78, 152-188

<223> unknown base

<400> 10

gcgctgnntg ncngnangng ggggcgggag gtgccgggtcg agggagcccc 50

gctctcagag ctccagggga ggagcgangg gagcgcgag cccggccgcc 100

tacagctcgc catggtgcgc cccctgaacc cgcgaccgct gccgcccgtg 150
gnnnnnnnnnn nnnnnnnnnnn nnnnnnnnnnn nnnnnnnngc ctctcgcagc 200
cggagacccc ttccacacag aaagccgact catgaacagc tgtctccagg 250
ccaggaggaa gtgccaggct gatccacact gc 282

<210> 11
<211> 20
<212> DNA
<213> Artificial

<400> 11
gcctctcgca gccggagacc 20

<210> 12
<211> 21
<212> DNA
<213> Artificial

<400> 12
caggtgggat cagcctggca c 21

<210> 13
<211> 41
<212> DNA
<213> Artificial

<400> 13
tctcgcagcc ggagaccccc ttccacaga aaagccgactc a 41

<210> 14
<211> 1792
<212> DNA
<213> Homo sapiens

<400> 14
atggtgcgcc cctgaaccc gcgaccgctg ccgcccgtag tctgatgtt 50
gctgctgctg ctgccgccgt cgcgctgcc tctcgcagcc ggagaccccc 100
ttccacaga aaagccgactc atgaacagct gtctccaggc caggaggaag 150
tgccaggctg atccacactg cagtgtgcc taccaccacc tggattcctg 200
cacctctagc ataagcacc cactgcctc agaggagcct tcggtccctg 250

ctgactgcct ggaggcagca cagcaactca ggaacagctc tctgataggc 300
 tgcattgtgc accggcgcat gaagaaccag gttgcctgct tggacatcta 350
 ttggaccgtt caccgtgccc gcagccttgg taactatgag ctggatgtct 400
 cccctatga agacacagtg accagcaaac cctggaaaat gaatctcagc 450
 aaactgaaca tgctcaaacc agactcagac ctctgcctca agtttgccat 500
 gctgtgtact ctcaatgaca agtgtgaccg gctgcgcaag gcctacgggg 550
 aggcgtgctc cgggccccac tgccagcgcc acgtctgcct caggcagctg 600
 ctcaatttct tcgagaaggc cggcgagccc cagcgcgagg gcctgctact 650
 gtgcccattg gcccccaacg accggggctg cggggagcgc cggcgcaaca 700
 ccacgcccc caactgcgcg ctgcgcctg tggcccccaa ctgcctggag 750
 ctgcggcgcc tctgtttctc cgacccgctt tgcagatcac gcctgggtga 800
 tttccagacc cactgccatc ccattggacat cctaggaact tgtgcaacag 850
 agcagtccag atgtctacga gcatacctgg ggctgattgg gactgccatg 900
 acccccaact ttgtcagcaa tgtcaacacc agtgttgctt taagctgcac 950
 ctgcccaggc agtggcaacc tgcaggagga gtgtgaaatg ctggaagggt 1000
 tcttctccca caaccctgc ctacggagg ccattgcagc taagatgcgt 1050
 tttcacagcc aactcttctc ccaggactgg ccacacctta cctttgctgt 1100
 gatggcacac cagaatgaaa accctgctgt gaggccacag ccctgggtgc 1150
 cctctctttt ctctgcacg ctcccttga ttctgtcctt gacccatagg 1200
 tagctggact tccccagggc cctcttcccc tccaccacac ccaggtggac 1250
 ttgcagccca caaggggtga ggaaaggaca gcagcaggaa ggaggtgcag 1300
 tgcgcagatg agggcacagg agaagctaag ggttatgacc tccagatcct 1350
 tactggtcca gtctcattc cctccacccc atctccactt ctgattcatg 1400
 ctgcccctcc ttggtggcca caatttagcc atgtcatctg gtggtgacca 1450

gctccaccaa gccctttct gagcccttc tcttgactac caggatcacc 1500
 agaatctaata agtttagcct ttctctattg cattccagat tagggtagg 1550
 gtagggagga ctgggtgttc tgaggcagcc tagaaagtca ttctcctttg 1600
 tgaagaaggc tcttgcccc tcgtctcctc ctctgagtgg aggatggaaa 1650
 actactgcct gcactgccct gtccccggat cctgccgaac atctgggcat 1700
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 tctctctggg ctcttggatc atgattaaac ctttgactta ag 1792

<210> 15
 <211> 400
 <212> PRT
 <213> Homo sapiens

<400> 15
 Met Val Arg Pro Leu Asn Pro Arg Pro Leu Pro Pro Val Val Leu
 1 5 10 15
 Met Leu Leu Leu Leu Leu Pro Pro Ser Pro Leu Pro Leu Ala Ala
 20 25 30
 Gly Asp Pro Leu Pro Thr Glu Ser Arg Leu Met Asn Ser Cys Leu
 35 40 45
 Gln Ala Arg Arg Lys Cys Gln Ala Asp Pro Thr Cys Ser Ala Ala
 50 55 60
 Tyr His His Leu Asp Ser Cys Thr Ser Ser Ile Ser Thr Pro Leu
 65 70 75
 Pro Ser Glu Glu Pro Ser Val Pro Ala Asp Cys Leu Glu Ala Ala
 80 85 90
 Gln Gln Leu Arg Asn Ser Ser Leu Ile Gly Cys Met Cys His Arg
 95 100 105
 Arg Met Lys Asn Gln Val Ala Cys Leu Asp Ile Tyr Trp Thr Val
 110 115 120
 His Arg Ala Arg Ser Leu Gly Asn Tyr Glu Leu Asp Val Ser Pro
 125 130 135
 Tyr Glu Asp Thr Val Thr Ser Lys Pro Trp Lys Met Asn Leu Ser

				140					145					150
Lys	Leu	Asn	Met	Leu	Lys	Pro	Asp	Ser	Asp	Leu	Cys	Leu	Lys	Phe
				155					160					165
Ala	Met	Leu	Cys	Thr	Leu	Asn	Asp	Lys	Cys	Asp	Arg	Leu	Arg	Lys
				170					175					180
Ala	Tyr	Gly	Glu	Ala	Cys	Ser	Gly	Pro	His	Cys	Gln	Arg	His	Val
				185					190					195
Cys	Leu	Arg	Gln	Leu	Leu	Thr	Phe	Phe	Glu	Lys	Ala	Ala	Glu	Pro
				200					205					210
His	Ala	Gln	Gly	Leu	Leu	Leu	Cys	Pro	Cys	Ala	Pro	Asn	Asp	Arg
				215					220					225
Gly	Cys	Gly	Glu	Arg	Arg	Arg	Asn	Thr	Ile	Ala	Pro	Asn	Cys	Ala
				230					235					240
Leu	Pro	Pro	Val	Ala	Pro	Asn	Cys	Leu	Glu	Leu	Arg	Arg	Leu	Cys
				245					250					255
Phe	Ser	Asp	Pro	Leu	Cys	Arg	Ser	Arg	Leu	Val	Asp	Phe	Gln	Thr
				260					265					270
His	Cys	His	Pro	Met	Asp	Ile	Leu	Gly	Thr	Cys	Ala	Thr	Glu	Gln
				275					280					285
Ser	Arg	Cys	Leu	Arg	Ala	Tyr	Leu	Gly	Leu	Ile	Gly	Thr	Ala	Met
				290					295					300
Thr	Pro	Asn	Phe	Val	Ser	Asn	Val	Asn	Thr	Ser	Val	Ala	Leu	Ser
				305					310					315
Cys	Thr	Cys	Arg	Gly	Ser	Gly	Asn	Leu	Gln	Glu	Glu	Cys	Glu	Met
				320					325					330
Leu	Glu	Gly	Phe	Phe	Ser	His	Asn	Pro	Cys	Leu	Thr	Glu	Ala	Ile
				335					340					345
Ala	Ala	Lys	Met	Arg	Phe	His	Ser	Gln	Leu	Phe	Ser	Gln	Asp	Trp
				350					355					360
Pro	His	Pro	Thr	Phe	Ala	Val	Met	Ala	His	Gln	Asn	Glu	Asn	Pro
				365					370					375
Ala	Val	Arg	Pro	Gln	Pro	Trp	Val	Pro	Ser	Leu	Phe	Ser	Cys	Thr

380 385 390
 Leu Pro Leu Ile Leu Leu Leu Ser Leu Trp
 395 400

<210> 16
 <211> 1837
 <212> DNA
 <213> Homo sapiens

<400> 16
 cccaggaccc tgggtgggaga gtgtgtgcgt cgcgctggag ggcgggagggc 50
 gggggcgggga ggtgccggtc gagggagccc cgctctcaga gctccagggg 100
 aggagcgagg ggagcgcgga gcccggcgcc tacagctcgc catggtgcgc 150
 cccctgaacc cgcgaccgct gccgcccgtg gtcctgatgt tgctgctgct 200
 gctgccgccg tcgccgctgc ctctcagc cggagacccc cttcccacag 250
 aaagccgact catgaacagc tgtctccagg ccaggaggaa gtgccaggct 300
 gatcccacct gcagtgtgc ctaccaccac ctggattcct gcacctctag 350
 cataagcacc ccaactgcct cagaggagcc ttcggtcctt gctgactgcc 400
 tggaggcagc acagcaactc aggaacagct ctctgatagg ctgcatgtgc 450
 caccggcgca tgaagaacca ggttgccctgc ttggacatct attggaccgt 500
 tcaccgtgcc cgcagccttg actcagacct ctgcctcaag tttgccatgc 550
 tgtgtactct caatgacaag tgtgaccggc tgcgcaaggc ctacggggag 600
 gcgtgctccg ggccccactg ccagcgcacc gtctgcctca ggcagctgct 650
 cactttcttc gagaaggccg ccgagcccca cgcgcaggga ctgctactgt 700
 gcccatgtgc cccaacgac cggggctgcg gggagcgcg gcgcaacacc 750
 atcgcacca actgcgcgt gccgcctgtg gcccccaact gctggagct 800
 gcggcgctc tgcttctccg acccgctttg cagatcacgc ctggtggatt 850
 tccagacca ctgccatccc atggacatcc taggaacttg tgcaacagag 900
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ccccaacttt gtcagcaatg tcaacaccag tgttgcctta agctgcacct 1000
 gccgaggcag tggcaacctg caggaggagt gtgaaatgct ggaagggttc 1050
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 tcacagccaa cctttctccc aggactggcc acaccctacc tttgctgtga 1150
 tggcacacca gaatgaaaac cctgctgtga ggccacagcc ctgggtgccc 1200
 tctcttttct cctgcacgct tcccttgatt ctgctcctga gcctatggta 1250
 gctggacttc cccagggccc tcttcccctc caccacaccc aggtggactt 1300
 gcagcccaca aggggtgagg aaaggacagc agcaggaagg aggtgcagtg 1350
 cgcagatgag ggcacaggag aagctaaggg ttatgacctc cagatcctta 1400
 ctggtccagt cctcattecc tccaccccat ctccacttct gattcatgct 1450
 gccctcctt ggtggccaca atttagccat gtcactctgt ggtgaccagc 1500
 tccaccaagc ccctttctga gcccttcctc ttgactacca ggatcaccag 1550
 aatctaataa gttagccttt ctctatcgca ttccagatta gggttagggt 1600
 agggaggact ggggtgtctg aggcagccta gaaagtcatt ctcttttgtg 1650
 aagaaggctc ctgccccctc gtctcctcct ctgagtggag gatggaaaac 1700
 tactgectgc actgccctgt ccccgatcc tggcgaacat ctgggcatca 1750
 ggagctggag cctgtgggcc ttgctttatt cctattattg tcctaaagtc 1800
 tctctgggct cttggatcat gattaaacct ttgactt 1837

<210> 17
 <211> 369
 <212> PRT
 <213> Homo sapiens

<400> 17
 Met Val Arg Pro Leu Asn Pro Arg Pro Leu Pro Pro Val Val Leu
 1 5 10 15
 Met Leu Leu Leu Leu Leu Pro Pro Ser Pro Leu Pro Leu Ala Ala
 20 25 30

Gly	Asp	Pro	Leu	Pro	Thr	Glu	Ser	Arg	Leu	Met	Asn	Ser	Cys	Leu	35	40	45
Gln	Ala	Arg	Arg	Lys	Cys	Gln	Ala	Asp	Pro	Thr	Cys	Ser	Ala	Ala	50	55	60
Tyr	His	His	Leu	Asp	Ser	Cys	Thr	Ser	Ser	Ile	Ser	Thr	Pro	Leu	65	70	75
Pro	Ser	Glu	Glu	Pro	Ser	Val	Pro	Ala	Asp	Cys	Leu	Glu	Ala	Ala	80	85	90
Gln	Gln	Leu	Arg	Asn	Ser	Ser	Leu	Ile	Gly	Cys	Met	Cys	His	Arg	95	100	105
Arg	Met	Lys	Asn	Gln	Val	Ala	Cys	Leu	Asp	Ile	Tyr	Trp	Thr	Val	110	115	120
His	Arg	Ala	Arg	Ser	Leu	Asp	Ser	Asp	Leu	Cys	Leu	Lys	Phe	Ala	125	130	135
Met	Leu	Cys	Thr	Leu	Asn	Asp	Lys	Cys	Asp	Arg	Leu	Arg	Lys	Ala	140	145	150
Tyr	Gly	Glu	Ala	Cys	Ser	Gly	Pro	His	Cys	Gln	Arg	His	Val	Cys	155	160	165
Leu	Arg	Gln	Leu	Leu	Thr	Phe	Phe	Glu	Lys	Ala	Ala	Glu	Pro	His	170	175	180
Ala	Gln	Gly	Leu	Leu	Leu	Cys	Pro	Cys	Ala	Pro	Asn	Asp	Arg	Gly	185	190	195
Cys	Gly	Glu	Arg	Arg	Arg	Asn	Thr	Ile	Ala	Pro	Asn	Cys	Ala	Leu	200	205	210
Pro	Pro	Val	Ala	Pro	Asn	Cys	Leu	Glu	Leu	Arg	Arg	Leu	Cys	Phe	215	220	225
Ser	Asp	Pro	Leu	Cys	Arg	Ser	Arg	Leu	Val	Asp	Phe	Gln	Thr	His	230	235	240
Cys	His	Pro	Met	Asp	Ile	Leu	Gly	Thr	Cys	Ala	Thr	Glu	Gln	Ser	245	250	255
Arg	Cys	Leu	Arg	Ala	Tyr	Leu	Gly	Leu	Ile	Gly	Thr	Ala	Met	Thr	260	265	270

Pro Asn Phe Val Ser Asn Val Asn Thr Ser Val Ala Leu Ser Cys
275 280 285

Thr Cys Arg Gly Ser Gly Asn Leu Gln Glu Glu Cys Glu Met Leu
290 295 300

Glu Gly Phe Phe Ser His Asn Pro Cys Leu Thr Glu Ala Ile Ala
305 310 315

Ala Lys Met Arg Phe His Ser Gln Leu Phe Ser Gln Asp Trp Pro
320 325 330

His Pro Thr Phe Ala Val Met Ala His Gln Asn Glu Asn Pro Ala
335 340 345

Val Arg Pro Gln Pro Trp Val Pro Ser Leu Phe Ser Cys Thr Leu
350 355 360

Pro Leu Ile Leu Leu Leu Ser Leu Trp
365 369

<210> 18

<211> 628

<212> PRT

<213> Artificial

<400> 18

Met Val Arg Pro Leu Asn Pro Arg Pro Leu Pro Pro Val Val Leu
1 5 10 15

Met Leu Leu Leu Leu Leu Pro Pro Ser Pro Leu Pro Leu Ala Ala
20 25 30

Gly Asp Pro Leu Pro Thr Glu Ser Arg Leu Met Asn Ser Cys Leu
35 40 45

Gln Ala Arg Arg Lys Cys Gln Ala Asp Pro Thr Cys Ser Ala Ala
50 55 60

Tyr His His Leu Asp Ser Cys Thr Ser Ser Ile Ser Thr Pro Leu
65 70 75

Pro Ser Glu Glu Pro Ser Val Pro Ala Asp Cys Leu Glu Ala Ala
80 85 90

Gln Gln Leu Arg Asn Ser Ser Leu Ile Gly Cys Met Cys His Arg
95 100 105

Arg	Met	Lys	Asn	Gln	Val	Ala	Cys	Leu	Asp	Ile	Tyr	Trp	Thr	Val
				110					115					120
His	Arg	Ala	Arg	Ser	Leu	Gly	Asn	Tyr	Glu	Leu	Asp	Val	Ser	Pro
				125					130					135
Tyr	Glu	Asp	Thr	Val	Thr	Ser	Lys	Pro	Trp	Lys	Met	Asn	Leu	Ser
				140					145					150
Lys	Leu	Asn	Met	Leu	Lys	Pro	Asp	Ser	Asp	Leu	Cys	Leu	Lys	Phe
				155					160					165
Ala	Met	Leu	Cys	Thr	Leu	Asn	Asp	Lys	Cys	Asp	Arg	Leu	Arg	Lys
				170					175					180
Ala	Tyr	Gly	Glu	Ala	Cys	Ser	Gly	Pro	His	Cys	Gln	Arg	His	Val
				185					190					195
Cys	Leu	Arg	Gln	Leu	Leu	Thr	Phe	Phe	Glu	Lys	Ala	Ala	Glu	Pro
				200					205					210
His	Ala	Gln	Gly	Leu	Leu	Leu	Cys	Pro	Cys	Ala	Pro	Asn	Asp	Arg
				215					220					225
Gly	Cys	Gly	Glu	Arg	Arg	Arg	Asn	Thr	Ile	Ala	Pro	Asn	Cys	Ala
				230					235					240
Leu	Pro	Pro	Val	Ala	Pro	Asn	Cys	Leu	Glu	Leu	Arg	Arg	Leu	Cys
				245					250					255
Phe	Ser	Asp	Pro	Leu	Cys	Arg	Ser	Arg	Leu	Val	Asp	Phe	Gln	Thr
				260					265					270
His	Cys	His	Pro	Met	Asp	Ile	Leu	Gly	Thr	Cys	Ala	Thr	Glu	Gln
				275					280					285
Ser	Arg	Cys	Leu	Arg	Ala	Tyr	Leu	Gly	Leu	Ile	Gly	Thr	Ala	Met
				290					295					300
Thr	Pro	Asn	Phe	Val	Ser	Asn	Val	Asn	Thr	Ser	Val	Ala	Leu	Ser
				305					310					315
Cys	Thr	Cys	Arg	Gly	Ser	Gly	Asn	Leu	Gln	Glu	Glu	Cys	Glu	Met
				320					325					330
Leu	Glu	Gly	Phe	Phe	Ser	His	Asn	Pro	Cys	Leu	Thr	Glu	Ala	Ile
				335					340					345

Ala	Ala	Lys	Met	Arg	Phe	His	Ser	Gln	Leu	Phe	Ser	Gln	Asp	Trp
				350					355					360
Pro	His	Pro	Thr	Phe	Ala	Val	Met	Ala	His	Gln	Asn	Glu	Asn	Pro
				365					370					375
Ala	Val	Arg	Pro	Gln	Pro	Trp	Val	Pro	Ser	Leu	Phe	Ser	Cys	Thr
				380					385					390
Leu	Pro	Leu	Ile	Leu	Leu	Leu	Ser	Leu	Trp	Pro	Asp	Lys	Thr	His
				395					400					405
Thr	Cys	Pro	Pro	Cys	Pro	Ala	Pro	Glu	Leu	Leu	Gly	Gly	Pro	Ser
				410					415					420
Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr	Leu	Met	Ile	Ser
				425					430					435
Arg	Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	His	Glu
				440					445					450
Asp	Pro	Glu	Val	Lys	Phe	Asn	Trp	Tyr	Val	Asp	Gly	Val	Glu	Val
				455					460					465
His	Asn	Ala	Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Tyr	Asn	Ser	Thr
				470					475					480
Tyr	Arg	Val	Val	Ser	Val	Leu	Thr	Val	Leu	His	Gln	Asp	Trp	Leu
				485					490					495
Asn	Gly	Lys	Glu	Tyr	Lys	Cys	Lys	Val	Ser	Asn	Lys	Ala	Leu	Pro
				500					505					510
Ala	Pro	Ile	Glu	Lys	Thr	Ile	Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg
				515					520					525
Glu	Pro	Gln	Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Glu	Glu	Met	Thr
				530					535					540
Lys	Asn	Gln	Val	Ser	Leu	Thr	Cys	Leu	Val	Lys	Gly	Phe	Tyr	Pro
				545					550					555
Ser	Asp	Ile	Ala	Val	Glu	Trp	Glu	Ser	Asn	Gly	Gln	Pro	Glu	Asn
				560					565					570
Asn	Tyr	Lys	Thr	Thr	Pro	Pro	Val	Leu	Asp	Ser	Asp	Gly	Ser	Phe
				575					580					585

Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
590 595 600

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
605 610 615

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
620 625 628

<210> 19

<211> 951

<212> PRT

<213> Homo sapiens

<400> 19

Met Gly Gly Thr Ala Ala Arg Leu Gly Ala Val Ile Leu Phe Val
1 5 10 15

Val Ile Val Gly Leu His Gly Val Arg Gly Lys Tyr Ala Leu Ala
20 25 30

Asp Ala Ser Leu Lys Met Ala Asp Pro Asn Arg Phe Arg Gly Lys
35 40 45

Asp Leu Pro Val Leu Asp Gln Leu Leu Glu Pro Ser Ser Leu Gln
50 55 60

Gly Ser Glu Leu His Gly Trp Arg Pro Gln Val Asp Cys Val Arg
65 70 75

Ala Asn Glu Leu Cys Ala Ala Glu Ser Asn Cys Ser Ser Arg Tyr
80 85 90

Arg Thr Leu Arg Gln Cys Leu Ala Gly Arg Asp Arg Asn Thr Met
95 100 105

Leu Ala Asn Lys Glu Cys Gln Ala Ala Leu Glu Val Leu Gln Glu
110 115 120

Ser Pro Leu Tyr Asp Cys Arg Cys Lys Arg Gly Met Lys Lys Glu
125 130 135

Leu Gln Cys Leu Gln Ile Tyr Trp Ser Ile His Leu Gly Leu Thr
140 145 150

Glu Gly Glu Glu Phe Tyr Glu Ala Ser Pro Tyr Glu Pro Val Thr
155 160 165

Ser	Arg	Leu	Ser	Asp	Ile	Phe	Arg	Leu	Ala	Ser	Ile	Phe	Ser	Gly	170	175	180
Thr	Gly	Thr	Asp	Pro	Ala	Val	Ser	Thr	Lys	Ser	Asn	His	Cys	Leu	185	190	195
Asp	Ala	Ala	Lys	Ala	Cys	Asn	Leu	Asn	Asp	Asn	Cys	Lys	Lys	Leu	200	205	210
Arg	Ser	Ser	Tyr	Ile	Ser	Ile	Cys	Asn	Arg	Glu	Ile	Ser	Pro	Thr	215	220	225
Glu	Arg	Cys	Asn	Arg	Arg	Lys	Cys	His	Lys	Ala	Leu	Arg	Gln	Phe	230	235	240
Phe	Asp	Arg	Val	Pro	Ser	Glu	Tyr	Thr	Tyr	Arg	Met	Leu	Phe	Cys	245	250	255
Ser	Cys	Gln	Asp	Gln	Ala	Cys	Ala	Glu	Arg	Arg	Arg	Gln	Thr	Ile	260	265	270
Leu	Pro	Ser	Cys	Ser	Tyr	Glu	Asp	Lys	Glu	Lys	Pro	Asn	Cys	Leu	275	280	285
Asp	Leu	Arg	Ser	Leu	Cys	Arg	Thr	Asp	His	Leu	Cys	Arg	Ser	Arg	290	295	300
Leu	Ala	Asp	Phe	His	Ala	Asn	Cys	Arg	Ala	Ser	Tyr	Arg	Thr	Ile	305	310	315
Thr	Ser	Cys	Pro	Ala	Asp	Asn	Tyr	Gln	Ala	Cys	Leu	Gly	Ser	Tyr	320	325	330
Ala	Gly	Met	Ile	Gly	Phe	Asp	Met	Thr	Pro	Asn	Tyr	Val	Asp	Ser	335	340	345
Asn	Pro	Thr	Gly	Ile	Val	Val	Ser	Pro	Trp	Cys	Asn	Cys	Arg	Gly	350	355	360
Ser	Gly	Asn	Met	Glu	Glu	Glu	Cys	Glu	Lys	Phe	Leu	Arg	Asp	Phe	365	370	375
Thr	Glu	Asn	Pro	Cys	Leu	Arg	Asn	Ala	Ile	Gln	Ala	Phe	Gly	Asn	380	385	390
Gly	Thr	Asp	Val	Asn	Met	Ser	Pro	Lys	Gly	Pro	Ser	Leu	Pro	Ala	395	400	405

Thr	Gln	Ala	Pro	Arg	Val	Glu	Lys	Thr	Pro	Ser	Leu	Pro	Asp	Asp	410	415	420
Leu	Ser	Asp	Ser	Thr	Ser	Leu	Gly	Thr	Ser	Val	Ile	Thr	Thr	Cys	425	430	435
Thr	Ser	Ile	Gln	Glu	Gln	Gly	Leu	Lys	Ala	Asn	Asn	Ser	Lys	Glu	440	445	450
Leu	Ser	Met	Cys	Phe	Thr	Glu	Leu	Thr	Thr	Asn	Ile	Ile	Pro	Gly	455	460	465
Trp	Arg	Ala	Trp	Val	Pro	Val	Val	Leu	Gly	Val	Leu	Thr	Ala	Leu	470	475	480
Val	Thr	Ala	Ala	Ala	Leu	Ala	Leu	Ile	Leu	Leu	Arg	Lys	Arg	Arg	485	490	495
Lys	Glu	Thr	Arg	Phe	Gly	Gln	Ala	Phe	Asp	Ser	Val	Met	Ala	Arg	500	505	510
Gly	Glu	Pro	Ala	Val	His	Phe	Arg	Ala	Ala	Arg	Ser	Phe	Asn	Arg	515	520	525
Glu	Arg	Pro	Glu	Arg	Ile	Glu	Ala	Thr	Leu	Asp	Ser	Leu	Gly	Ile	530	535	540
Ser	Asp	Glu	Leu	Lys	Glu	Lys	Leu	Glu	Asp	Val	Leu	Ile	Pro	Glu	545	550	555
Gln	Gln	Phe	Thr	Leu	Gly	Arg	Met	Leu	Gly	Lys	Gly	Glu	Phe	Gly	560	565	570
Ser	Val	Arg	Glu	Ala	Gln	Leu	Lys	Gln	Glu	Asp	Gly	Ser	Phe	Val	575	580	585
Lys	Val	Ala	Val	Lys	Met	Leu	Lys	Ala	Asp	Ile	Ile	Ala	Ser	Ser	590	595	600
Asp	Ile	Glu	Glu	Phe	Leu	Arg	Glu	Ala	Ala	Cys	Met	Lys	Glu	Phe	605	610	615
Asp	His	Pro	His	Val	Ala	Lys	Leu	Val	Gly	Val	Ser	Leu	Arg	Ser	620	625	630
Arg	Ala	Lys	Gly	Arg	Leu	Pro	Ile	Pro	Met	Val	Ile	Leu	Pro	Phe	635	640	645

Met	Lys	His	Gly	Asp	Leu	His	Ala	Phe	Leu	Leu	Ala	Ser	Arg	Ile	650	655	660
Gly	Glu	Asn	Pro	Phe	Asn	Leu	Pro	Leu	Gln	Thr	Leu	Ile	Arg	Phe	665	670	675
Met	Val	Asp	Ile	Ala	Cys	Gly	Met	Glu	Tyr	Leu	Ser	Ser	Arg	Asn	680	685	690
Phe	Ile	His	Arg	Asp	Leu	Ala	Ala	Arg	Asn	Cys	Met	Leu	Ala	Glu	695	700	705
Asp	Met	Thr	Val	Cys	Val	Ala	Asp	Phe	Gly	Leu	Ser	Arg	Lys	Ile	710	715	720
Tyr	Ser	Gly	Asp	Tyr	Tyr	Arg	Gln	Gly	Cys	Ala	Ser	Lys	Leu	Pro	725	730	735
Val	Lys	Trp	Leu	Ala	Leu	Glu	Ser	Leu	Ala	Asp	Asn	Leu	Tyr	Thr	740	745	750
Val	Gln	Ser	Asp	Val	Trp	Ala	Phe	Gly	Val	Thr	Met	Trp	Glu	Ile	755	760	765
Met	Thr	Arg	Gly	Gln	Thr	Pro	Tyr	Ala	Gly	Ile	Glu	Asn	Ala	Glu	770	775	780
Ile	Tyr	Asn	Tyr	Leu	Ile	Gly	Gly	Asn	Arg	Leu	Lys	Gln	Pro	Pro	785	790	795
Glu	Cys	Met	Glu	Asp	Val	Tyr	Asp	Leu	Met	Tyr	Gln	Cys	Trp	Ser	800	805	810
Ala	Asp	Pro	Lys	Gln	Arg	Pro	Ser	Phe	Thr	Cys	Leu	Arg	Met	Glu	815	820	825
Leu	Glu	Asn	Ile	Leu	Gly	Gln	Leu	Ser	Val	Leu	Ser	Ala	Ser	Gln	830	835	840
Asp	Pro	Leu	Tyr	Ile	Asn	Ile	Glu	Arg	Ala	Glu	Glu	Pro	Thr	Ala	845	850	855
Gly	Gly	Ser	Leu	Glu	Leu	Pro	Gly	Arg	Asp	Gln	Pro	Tyr	Ser	Gly	860	865	870
Ala	Gly	Asp	Gly	Ser	Gly	Met	Gly	Ala	Val	Gly	Gly	Thr	Pro	Ser	875	880	885

Asp Cys Arg Tyr Ile Leu Thr Pro Gly Gly Leu Ala Glu Gln Pro
890 895 900

Gly Gln Ala Glu His Gln Pro Glu Ser Pro Leu Asn Glu Thr Gln
905 910 915

Arg Leu Leu Leu Leu Gln Gln Gly Leu Leu Pro His Ser Ser Cys
920 925 930

Ala Asp Ala Ser Leu Lys Met Ala Asp Pro Asn Arg Phe Arg Gly
935 940 945

Lys Asp Leu Pro Val Leu
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Val Ile Val Gly Leu His Gly Val Arg Gly Lys Tyr Ala Leu Ala
20 25 30

Asp Ala Ser Leu Lys Met Ala Asp Pro Asn Arg Phe Arg Gly Lys
35 40 45

Asp Leu Pro Val Leu Asp Gln Leu Leu Glu Ala Gly Asn Ser Leu
50 55 60

Ala Thr Glu Asn Arg Phe Val Asn Ser Cys Thr Gln Ala Arg Lys
65 70 75

Lys Cys Glu Ala Asn Pro Ala Cys Lys Ala Ala Tyr Gln His Leu
80 85 90

Gly Ser Cys Thr Ser Ser Leu Ser Arg Pro Leu Pro Leu Glu Glu
95 100 105

Ser Ala Met Ser Ala Asp Cys Leu Glu Ala Ala Glu Gln Leu Arg
110 115 120

Asn Ser Ser Leu Ile Asp Cys Arg Cys His Arg Arg Met Lys His
125 130 135

Gln	Ala	Thr	Cys	Leu	Asp	Ile	Tyr	Trp	Thr	Val	His	Pro	Ala	Arg
				140					145					150
Ser	Leu	Gly	Asp	Tyr	Glu	Leu	Asp	Val	Ser	Pro	Tyr	Glu	Asp	Thr
				155					160					165
Val	Thr	Ser	Lys	Pro	Trp	Lys	Met	Asn	Leu	Ser	Lys	Leu	Asn	Met
				170					175					180
Leu	Lys	Pro	Asp	Ser	Asp	Leu	Cys	Leu	Lys	Phe	Ala	Met	Leu	Cys
				185					190					195
Thr	Leu	His	Asp	Lys	Cys	Asp	Arg	Leu	Arg	Lys	Ala	Tyr	Gly	Glu
				200					205					210
Ala	Cys	Ser	Gly	Ile	Arg	Cys	Gln	Arg	His	Leu	Cys	Leu	Ala	Gln
				215					220					225
Leu	Arg	Ser	Phe	Phe	Glu	Lys	Ala	Ala	Glu	Ser	His	Ala	Gln	Gly
				230					235					240
Leu	Leu	Leu	Cys	Pro	Cys	Pro	Pro	Glu	Asp	Ala	Gly	Cys	Gly	Glu
				245					250					255
Arg	Arg	Arg	Asn	Thr	Ile	Ala	Pro	Ser	Cys	Ala	Leu	Pro	Ser	Val
				260					265					270
Thr	Pro	Asn	Cys	Leu	Asp	Leu	Arg	Ser	Phe	Cys	Arg	Ala	Asp	Pro
				275					280					285
Leu	Cys	Arg	Ser	Arg	Leu	Met	Asp	Phe	Gln	Thr	His	Cys	His	Pro
				290					295					300
Met	Asp	Ile	Leu	Gly	Thr	Cys	Ala	Thr	Glu	Gln	Ser	Arg	Cys	Leu
				305					310					315
Arg	Ala	Tyr	Leu	Gly	Leu	Ile	Gly	Thr	Ala	Met	Thr	Pro	Asn	Phe
				320					325					330
Ile	Ser	Lys	Val	Asn	Thr	Thr	Val	Ala	Leu	Ser	Cys	Thr	Cys	Arg
				335					340					345
Gly	Ser	Gly	Asn	Leu	Gln	Asp	Glu	Cys	Glu	Gln	Leu	Glu	Arg	Ser
				350					355					360
Phe	Ser	Gln	Asn	Pro	Cys	Leu	Val	Glu	Ala	Ile	Ala	Ala	Lys	Met
				365					370					375

Arg	Phe	His	Arg	Gln	Leu	Phe	Ser	Gln	Asp	Trp	Ala	Asp	Ser	Thr
				380					385					390
Phe	Ser	Val	Val	Gln	Gln	Gln	Asn	Ser	Asn	Pro	Ala	Trp	Arg	Ala
				395					400					405
Trp	Val	Pro	Val	Val	Leu	Gly	Val	Leu	Thr	Ala	Leu	Val	Thr	Ala
				410					415					420
Ala	Ala	Leu	Ala	Leu	Ile	Leu	Leu	Arg	Lys	Arg	Arg	Lys	Glu	Thr
				425					430					435
Arg	Phe	Gly	Gln	Ala	Phe	Asp	Ser	Val	Met	Ala	Arg	Gly	Glu	Pro
				440					445					450
Ala	Val	His	Phe	Arg	Ala	Ala	Arg	Ser	Phe	Asn	Arg	Glu	Arg	Pro
				455					460					465
Glu	Arg	Ile	Glu	Ala	Thr	Leu	Asp	Ser	Leu	Gly	Ile	Ser	Asp	Glu
				470					475					480
Leu	Lys	Glu	Lys	Leu	Glu	Asp	Val	Leu	Ile	Pro	Glu	Gln	Gln	Phe
				485					490					495
Thr	Leu	Gly	Arg	Met	Leu	Gly	Lys	Gly	Glu	Phe	Gly	Ser	Val	Arg
				500					505					510
Glu	Ala	Gln	Leu	Lys	Gln	Glu	Asp	Gly	Ser	Phe	Val	Lys	Val	Ala
				515					520					525
Val	Lys	Met	Leu	Lys	Ala	Asp	Ile	Ile	Ala	Ser	Ser	Asp	Ile	Glu
				530					535					540
Glu	Phe	Leu	Arg	Glu	Ala	Ala	Cys	Met	Lys	Glu	Phe	Asp	His	Pro
				545					550					555
His	Val	Ala	Lys	Leu	Val	Gly	Val	Ser	Leu	Arg	Ser	Arg	Ala	Lys
				560					565					570
Gly	Arg	Leu	Pro	Ile	Pro	Met	Val	Ile	Leu	Pro	Phe	Met	Lys	His
				575					580					585
Gly	Asp	Leu	His	Ala	Phe	Leu	Leu	Ala	Ser	Arg	Ile	Gly	Glu	Asn
				590					595					600
Pro	Phe	Asn	Leu	Pro	Leu	Gln	Thr	Leu	Ile	Arg	Phe	Met	Val	Asp
				605					610					615

Ile	Ala	Cys	Gly	Met	Glu	Tyr	Leu	Ser	Ser	Arg	Asn	Phe	Ile	His
				620					625					630
Arg	Asp	Leu	Ala	Ala	Arg	Asn	Cys	Met	Leu	Ala	Glu	Asp	Met	Thr
				635					640					645
Val	Cys	Val	Ala	Asp	Phe	Gly	Leu	Ser	Arg	Lys	Ile	Tyr	Ser	Gly
				650					655					660
Asp	Tyr	Tyr	Arg	Gln	Gly	Cys	Ala	Ser	Lys	Leu	Pro	Val	Lys	Trp
				665					670					675
Leu	Ala	Leu	Glu	Ser	Leu	Ala	Asp	Asn	Leu	Tyr	Thr	Val	Gln	Ser
				680					685					690
Asp	Val	Trp	Ala	Phe	Gly	Val	Thr	Met	Trp	Glu	Ile	Met	Thr	Arg
				695					700					705
Gly	Gln	Thr	Pro	Tyr	Ala	Gly	Ile	Glu	Asn	Ala	Glu	Ile	Tyr	Asn
				710					715					720
Tyr	Leu	Ile	Gly	Gly	Asn	Arg	Leu	Lys	Gln	Pro	Pro	Glu	Cys	Met
				725					730					735
Glu	Asp	Val	Tyr	Asp	Leu	Met	Tyr	Gln	Cys	Trp	Ser	Ala	Asp	Pro
				740					745					750
Lys	Gln	Arg	Pro	Ser	Phe	Thr	Cys	Leu	Arg	Met	Glu	Leu	Glu	Asn
				755					760					765
Ile	Leu	Gly	Gln	Leu	Ser	Val	Leu	Ser	Ala	Ser	Gln	Asp	Pro	Leu
				770					775					780
Tyr	Ile	Asn	Ile	Glu	Arg	Ala	Glu	Glu	Pro	Thr	Ala	Gly	Gly	Ser
				785					790					795
Leu	Glu	Leu	Pro	Gly	Arg	Asp	Gln	Pro	Tyr	Ser	Gly	Ala	Gly	Asp
				800					805					810
Gly	Ser	Gly	Met	Gly	Ala	Val	Gly	Gly	Thr	Pro	Ser	Asp	Cys	Arg
				815					820					825
Tyr	Ile	Leu	Thr	Pro	Gly	Gly	Leu	Ala	Glu	Gln	Pro	Gly	Gln	Ala
				830					835					840
Glu	His	Gln	Pro	Glu	Ser	Pro	Leu	Asn	Glu	Thr	Gln	Arg	Leu	Leu
				845					850					855

Leu Leu Gln Gln Gly Leu Leu Pro His Ser Ser Cys Ala Asp Ala
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Ser Leu Lys Met Ala Asp Pro Asn Arg Phe Arg Gly Lys Asp Leu
875 880 885

Pro Val Leu
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